Analytical Data Package Prepared For

CH2M Hill Plateau Remediation

Radiochemical Analysis By

TestAmerica TARL

2800 G.W. Way, Richland Wa, 99354, (509)-375-3131.

Data Package Contains _____ Pages

Report Nbr: 56019

SDG Nbr	ORDER Nbr	CLIENT ID NUMBER	LOT Nbr	WORK ORDER	RPT DB ID	BATCH
W06567	F10-284	B2PD97	J3E160433-1	M0V181AA	9M0V1810	3136052
		B2PD99	J3E160433-2	M0V191AA	9M0V1910	3136052
		B2PDB1	J3E160433-3	M0V2A1AA	9M0V2A10	3136052

Comments:

JULY 3, 2013

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Certificate of Analysis

TestAmerica Laboratories, Inc.

CH2M Hill Plateau Remediation Company
P.O. Box 1600
Mail Stop – R3-60
Richland, WA 99352

July 3, 2013

Attention: Scot Fitzgerald

SAF Number	:	F10-284
Date SDG Closed	:	May 14, 2013
Number of Samples	:	Three (3)
Sample Type	:	Water
SDG Number	:	W06567
Data Deliverable	:	30 Day / 30 Day Summary

CASE NARRATIVE

I. Introduction

On May 14, 2013, three water samples were received at TestAmerica (TARL). Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the CH2M specific ID:

CH2M ID#	TARL ID#	MATRIX	DATE OF RECEIPT
B2PD97	M0V18	WATER	5/14/13
B2PD99	M0V19	WATER	5/14/13
B2PDB1	M0V2A	WATER	5/14/13

II. Sample Receipt

The samples were received in good condition and no anomalies were noted during check-in.

III. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information, analytical results and the appropriate associated statistical errors.

The requested analyses were:

Liquid Scintillation Counting
Carbon-14 by method RL-LSC-008

IV. Quality Control

The analytical results for each analysis performed includes a minimum of one laboratory control sample (LCS), one method (reagent) blank, and one duplicate sample analysis. Any exceptions have been noted in the "Comments" section.

QC and sample results are reported in the same units.

V. Comments

Liquid Scintillation Counting

Carbon-14 by method RL-LSC-008:

The RPD on the duplicate sample is more than 20%. Both the sample and duplicate results are < 5 X the RDL. The difference between the sample and duplicate does not exceed the RDL therefore the result is acceptable. Except as note, the LCS, batch blank, samples and sample duplicate (B2PD97) results are within contractual requirements.

I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager, or a designee as verified by the following signature.

Reviewed and approved:

Sandra Seger
Project Manager

Drinking Water Method Cross References

	DRINKING WATER ASTM METHOD CROSS REFERENCES	
Referenced Method	**Isotope(s)**	**TestAmerica Richland's SOP No.**
EPA 901.1	Cs-134, I-131	RL-GAM-001
EPA 900.0	Alpha & Beta	RL-GPC-001
EPA 00-02	Gross Alpha (Coprecipitation)	RL-GPC-002
EPA 903.0	Total Alpha Radium (Ra-226)	RL-RA-002
EPA 903.1	Ra-226	RL-RA-001
EPA 904.0	Ra-228	RL-RA-001
EPA 905.0	Sr-89/90	RL-GPC-003
ASTM D5174	Uranium	RL-KPA-003
EPA 906.0	Tritium	RL-LSC-005

Results in this report relate only to the sample(s) analyzed.

Uncertainty Estimation

TestAmerica Richland has adopted the internationally accepted approach to estimating uncertainties described in "NIST Technical Note 1297, 1994 Edition". The approach, "Law of Propagation of Errors", involves the identification of all variables in an analytical method which are used to derive a result. These variables are related to the analytical result (R) by some functional relationship, R = constants * f(x,y,z,...). The components (x,y,z) are evaluated to determine their contribution to the overall method uncertainty. The individual component uncertainties (u_i) are then combined using a statistical model that provides the most probable overall uncertainty value. All component uncertainties are categorized as type A, evaluated by statistical methods, or type B, evaluated by other means. Uncertainties not included in the components, such as sample homogeneity, are combined with the component uncertainty as the square root of the sum-of-the-squares of the individual uncertainties. The uncertainty associated with the derived result is the combined uncertainty (u_c) multiplied by the coverage factor (1,2, or 3).

When three or more sample replicates are used to derive the analytical result, the type A uncertainty is the standard deviation of the mean value (S/?n), where S is the standard deviation of the derived results. The type B uncertainties are all other random or non-raudom components that are not included in the standard deviation.

The derivation of the general "Law of Propagation of Errors" equations and specific example are available on request.

Report Definitions

Action Lev	An agreed upon activity level used to trigger some action when the final result is greater than or equal to the Action Level. Often the Action Level is related to the Decision Limit.
Batch	The QC preparation batch number that relates laboratory samples to QC samples that were prepared and analyzed together.
Bias	Defined by the equation (Result/Expected)-1 as defined by ANSI N13.30.
COC No	Chain of Custody Number assigned by the Client or TestAmerica.
Count Error (#s)	Poisson counting statistics of the gross sample count and background. The uncertainty is absolute and in the same units as the result. For Liquid Scintillation Counting (LSC) the batch blank count is the background.
Total Uncert (#s) ***u_c – Combined Uncertainty.***	All known uncertainties associated with the preparation and analysis of the sample are propagated to give a measure of the uncertainty associated with the result, ***u_c the combined uncertainty.*** The uncertainty is absolute and in the same units as the result.
(#s), Coverage Factor	The coverage factor defines the width of the confidence interval, 1, 2 or 3 standard deviations.
CRDL (RL)	Contractual Required Detection Limit as defined in the Client's Statement Of Work or TestAmerica "default" nominal detection limit. Often referred to the reporting level (RL)
Lc	Decision Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume associated with the sample. The Type I error probability is approximately 5%. Lc=(1.645 * Sqrt(2*(BkgrndCnt/BkgrndCntMin)/SCntMin)) * (ConvFct/(Eff*Yld*Abn*Vol) * IngrFct). For LSC methods the batch blank is used as a measure of the background variability. Lc cannot be calculated when the background count is zero.
Lot-Sample No	The number assigned by the LIMS software to track samples received on the same day for a given client. The sample number is a sequential number assigned to each sample in the Lot.
MDC|MDA	Detection Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume with a Type I and II error probability of approximately 5%. MDC = (4.65 * Sqrt((BkgrndCnt/BkgrndCntMin)/SCntMin) + 2.71/SCntMin) * (ConvFct/(Eff * Yld * Abn * Vol) * IngrFct). For LSC methods the batch blank is used as a measure of the background variability.
Primary Detector	The instrument identifier associated with the analysis of the sample aliquot.
Ratio U-234/U-238	The U-234 result divided by the U-238 result. The U-234/U-238 ratio for natural uranium in NIST SRM 4321C is 1.038.
Rst/MDC	Ratio of the Result to the MDC. A value greater than 1 may indicate activity above background at a high level of confidence. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Rst/TotUcert	Ratio of the Result to the Total Uncertainty. If the uncertainty has a coverage factor of 2 a value greater than 1 may indicate activity above background at approximately the 95% level of confidence assuming a two-sided confidence interval. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Report DB No	Sample Identifier used by the report system. The number is based upon the first five digits of the **Work Order** Number.
RER	The equation Replicate Error Ratio = (S-D)/[sqrt($TPUs^2$ + $TPUd^2$)] as defined by ICPT BOA where S is the original sample result, D is the result of the duplicate, TPUs is the total uncertainty of the original sample and TPUd is the total uncertainty of the duplicate sample.
SDG	Sample Delivery Group Number assigned by the Client or assigned by TestAmerica upon sample receipt.
Sum Rpt Alpha Spec Rst(s)	The sum of the reported alpha spec results for tests derived from the same sample excluding duplicate result where the results are in the same units.
Work Order	The LIMS software assign test specific identifier.
Yield	The recovery of the tracer added to the sample such as Pu-242 used to trace a Pu-239/40 method.

7/3/2013 9:20:44 AM

TestAmerica Report

Lab Code: TARL

FormNbr: R **FormatType:** FEAD **Version:** 05 **Rpt Nbr:** 56019 **File Name:** h:\Reportdb\edd\FeadIV\Rad\W06567.Edd, h:\Reportdb\edd\FeadIV\Rad\56019.Ed

Lab Sample Id:	Client Id:	Test User	Contract Nbr	SAF Nbr	Sdg Nbr:	QC Type:	Moisture/ Solids%*:	Distilled Volume	Sample On Date:	Collection Date:
9M0V1810	B2PD97	F10-284	MW6-SBB-A1	F10-284	W06567					05/14/2013 08:17

Batch	Analyte	CAS#	Result	Unit	CntU 2S	TotU 2S	Qual	MDA	TrcYield	Method	Alq Size	Unit	Analy Date/Time	Act
3136052	C-14	14762-75-5	3.69E+02	pCi/L	3.0E+01	4.0E+01		3.54E+01	100.0	C14_LSC	7.49E-02	L	07/01/2013 14:29	I

Lab Sample Id:	Client Id:	Test User	Contract Nbr	SAF Nbr	Sdg Nbr:	QC Type:	Moisture/ Solids%*:	Distilled Volume	Sample On Date:	Collection Date:
9M0V1910	B2PD99	F10-284	MW6-SBB-A1	F10-284	W06567					05/14/2013 08:17

Batch	Analyte	CAS#	Result	Unit	CntU 2S	TotU 2S	Qual	MDA	TrcYield	Method	Alq Size	Unit	Analy Date/Time	Act
3136052	C-14	14762-75-5	4.75E+02	pCi/L	3.3E+01	4.6E+01		3.53E+01	100.0	C14_LSC	7.51E-02	L	07/01/2013 15:01	I

Lab Sample Id:	Client Id:	Test User	Contract Nbr	SAF Nbr	Sdg Nbr:	QC Type:	Moisture/ Solids%*:	Distilled Volume	Sample On Date:	Collection Date:
9M0V2A10	B2PDB1	F10-284	MW6-SBB-A1	F10-284	W06567					05/14/2013 08:40

Batch	Analyte	CAS#	Result	Unit	CntU 2S	TotU 2S	Qual	MDA	TrcYield	Method	Alq Size	Unit	Analy Date/Time	Act
3136052	C-14	14762-75-5	5.18E+02	pCi/L	3.4E+01	4.9E+01		3.51E+01	100.0	C14_LSC	7.54E-02	L	07/01/2013 15:18	I

JULY 3, 2013

U Qual - Analyzed for, but the result is less than the Mdc or gamma scan did not identify the nuclide.
J Qual - No U qualifier has been assigned and the result is below the Reporting Limit (CRDL).
B Qual- Analyte was found in the associated laboratory blank above the MDC.

Wednesday, July 03, 2013

TestAmerica QC Blank Report

Lab Code: TARL

FormNbr: R FormatType: FEAD VersionNbr: 05 File Name: h:\Reportdb\edd\FeadIV\Rad\W06567.Edd, h:\Reportdb\edd\FeadIV\Rad\56019.Ed

Lab Sample Id:	M0V391AB	**Sdg/Rept Nbr:**	W06567 56019	**Collection Date:**	05/14/2013 08:17
Client Id:	NA	**Matrix:**	WATER WATER	**Sample On Date:**	
Moisture/Solids%*:		**QC Type:**	BLK	**Received Date:**	05/14/2013

SAF Nbr	Contract Nbr	Test User	Case Nbr	SAS Nbr	Suffix	Decant	Distilled Volume	File Id	FSuffix	RTyp
	MW6-SBB-A19981								AE	H

Batch # / Qc Type	Analyt/ CAS#	Result/ Orig Rst	Unit	Tot/Cnt Uncert 2S	Qu-al	MDC	Tracer Yield	Spk Conc/ %Rec	Analy Method	Aliq Size/	Date/Time Analyzed	RPD/ UCL	RER/ UCL	LCS LCL/UCL	R Typ
3136052	C-14	-6.98E+00	pCi/L	1.6E+01	U	3.54E+01	100.0		C14_LSC	7.47E-02	07/01/2013				D
BLK	14762-75-5			1.4E+01						L	15:34				

JULY 3, 2013

U Qual - Analyzed for, but the result is less than the Mdc or gamma scan did not identify the nuclide.
J Qual - No U qualifier has been assigned and the result is below the Reporting Limit (CRDL).
B Qual- Analyte was found in the associated laboratory blank above the MDC.

Wednesday, July 03, 2013

TestAmerica QC Control Sample Report

Lab Code: TARL

FormNbr: R **FormatType:** FEAD **VersionNbr:** 05 **File Name:** h:\Reportdb\edd\FeadIV\Rad\W06567.Edd, h:\Reportdb\edd\FeadIV\Rad\56019.Ed

Lab Sample Id:	M0V391CS	**Sdg/Rept Nbr:**	W06567	56019	**Collection Date:** 05/14/2013 08:17
Client Id:	NA	**Matrix:**	WATER	WATER	**Sample On Date:**
Moisture/Solids%*:		**QC Type:**	BS		**Received Date:** 05/14/2013

SAF Nbr	Contract Nbr	Test User	Case Nbr	SAS Nbr	Suffix	Decant	Distilled Volume	File Id	FSuffix	RTyp
	MW6-SBB-A19981								AF	H

Batch # / Qc Type	Analyt/ CAS#	Result/ Orig Rst	Unit	Tot/Cnt Uncert 2S	Qu-al	MDC	Tracer Yield	Spk Conc/ %Rec	Analy Method	Aliq Size/	Date/Time Analyzed	RPD/ UCL	RER/ UCL	LCS LCL/UCL	R Typ
3136052	C-14	4.85E+02	pCi/L	4.7E+01		3.53E+01	100.0	4.79E+02	C14_LSC	7.52E-02	07/01/2013			70	D
BS	14762-75-5			3.3E+01				101.2		L	15:50			130	

JULY 3, 2013

U Qual - Analyzed for, but the result is less than the Mdc or gamma scan did not identify the nuclide.
J Qual - No U qualifier has been assigned and the result is below the Reporting Limit (CRDL).
B Qual- Analyte was found in the associated laboratory blank above the MDC.

Wednesday, July 03, 2013

TestAmerica QC Duplicate Report

Lab Code: TARL

FormNbr: R **FormatType:** FEAD **VersionNbr:** 05 **File Name:** h:\Reportdb\edd\FeadIV\Rad\W06567.Edd, h:\Reportdb\edd\FeadIV\Rad\56019.Ed

Lab Sample Id:	M0V181CR	**Sdg/Rept Nbr:**	W06567	56019	**Collection Date:** 05/14/2013 08:17
Client Id:	B2PD97	**Matrix:**	WATER	WATER	**Sample On Date:**
Moisture/Solids%*:		**QC Type:**	DUP		**Received Date:** 05/14/2013

SAF Nbr	Contract Nbr	Test User	Case Nbr	SAS Nbr	Suffix	Decant	Distilled Volume	File Id	FSuffix	RTyp
F10-284	MW6-SBB-A19981								AD	H

Batch # / Qc Type	Analyt/ CAS#	Result/ Orig Rst	Unit	Tot/Cnt Uncert 2S	Qu-al	MDC	Tracer Yield	Spk Conc/ %Rec	Analy Method	Aliq Size/	Date/Time Analyzed	RPD/ UCL	RER/ UCL	LCS LCL/UCL	R Typ
3136052	C-14	4.61E+02	pCi/L	4.6E+01		3.53E+01	100.0		C14_LSC	7.51E-02	07/01/2013	22.1	2.9		D
DUP	14762-75-5	3.69E+02		3.3E+01						L	14:45	20.0	3		

JULY 3, 2013

U Qual - Analyzed for, but the result is less than the Mdc or gamma scan did not identify the nuclide.
J Qual - No U qualifier has been assigned and the result is below the Reporting Limit (CRDL).
B Qual- Analyte was found in the associated laboratory blank above the MDC.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

7/2/2013 12:55:30 PM

Lot No., Due Date: J3E160433; 06/14/2013
Client, Site: 108302; FLH HANFORD
QC Batch No., Method Test: 3136052; RC14 C-14 by LSC
SDG, Matrix: W06567; WATER

	Yes	No	N/A
1.0 COC			
1.1 Is the ICOC page complete; includes all applicable analysis, dates, SOP numbers, and revisions?	✓		
2.0 QC Batch			
2.1 Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet?	✓		
2.2 Are the QC appropriate for the analysis included in the batch?	✓		
2.3 Is the Analytical Batch Worksheet complete; includes as appropriate, volumes, count times, etc?	✓		
2.4 Does the Worksheets include a Tracer Vial label for each sample?			✓
3.0 QC & Samples			
3.1 Is the blank results, yield, and MDA within contract limits?	✓		
3.2 Is the LCS result, yield, and MDA within contract limits?	✓		
3.3 Are the MS/MSD results, yields, and MDA within contract limits?			✓
3.4 Are the duplicate result, yields, and MDAs within contract limits?	✓		
3.5 Are the sample yields and MDAs within contract limits?	✓		
4.0 Raw Data			
4.1 Were results calculated in the correct units?	✓		
4.2 Were analysis volumes entered correctly?	✓		
4.3 Were Yields entered correctly?			✓
4.4 Were spectra reviewed/meet contractual requirements?			✓
4.5 Were raw counts reviewed for anomalies?	✓		
5.0 Other			
5.1 Are all nonconformances included and noted?			✓
5.2 Are all required forms filled out?	✓		
5.3 Was the correct methodology used?	✓		
5.4 Was transcription checked?	✓		
5.5 Were all calculations checked at a minimum frequency?			✓
5.6 Are worksheet entries complete and correct?	✓		

6.0 Comments on any No response:

First Level _____ Date 7/2/13

TestAmerica Richland
QAS_RADCALCv4.8.44

Page 1

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

Batch Number: 3136052

Review Item	Yes (√)	No (√)	NA (√)
A. Sample Analysis			
1. Are the sample yields within acceptance criteria?			✓
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓		
3. Are the correct isotopes reported?	✓		
B. QC Samples			
1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓		
2. Does the blank result meet the Contract criteria?	✓		
3. Is the blank result < the Contract Detection Limit?	✓		
4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓
5. Is the LCS recovery within contract acceptance criteria?	✓		
6. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓		
7. Do the MS/MSD results and yields meet acceptance criteria?			✓
8. Do the duplicate sample results and yields meet acceptance criteria?	✓		
C. Other			
1. Are all Non-conformances included and noted?			✓
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?	✓		
6. Were units checked?	✓		

Comments on any "No" response: _____

Second Level Review: Sandra Legou Date: 7-3-13

LS-038B, Rev. 10, 9/07

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F10-284-060	PAGE 1 OF 1
COLLECTOR Kavel McIntyre	COMPANY CONTACT EVANS, RT	TELEPHONE NO. 373-7924	PROJECT COORDINATOR EVANS, RT	PRICE CODE 7H AIR QUALITY ☐	DATA TURNAROUND 30 Days / 30 Days
SAMPLING LOCATION Influent Valve, V-WE06C	PROJECT DESIGNATION 100-KW Pump and Treat Influent & Effluent Tanks - Water		SAF NO. F10-284		
ICE CHEST NO.	FIELD LOGBOOK NO. HNF-N-491-9/78	ACTUAL SAMPLE DEPTH N/A	COA 302886ES10	METHOD OF SHIPMENT GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO TestAmerica Incorporated, Richland	OFFSITE PROPERTY NO. SEE PTR		BILL OF LADING/AIR BILL NO. SEE PTR		

MATRIX*
A=Air
DL=Drum Liquids
DS=Drum Solids
L=Liquid
O=Oil
S=Soil
SE=Sediment
T=Tissue
V=Vegetation
W=Water
WI=Wipe
X=Other

POSSIBLE SAMPLE HAZARDS/ REMARKS
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.

PRESERVATION	None
HOLDING TIME	6 Months
TYPE OF CONTAINER	G/P
NO. OF CONTAINER(S)	2
VOLUME	1L
SAMPLE ANALYSIS	C14_LSC: COMMON;

SPECIAL HANDLING AND/OR STORAGE

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B2PD97	WATER	5-14-13	0817	✓

J3E160433
W06567
Due 6/14/13
MOV18

J3E160433

CHAIN OF POSSESSION		SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM Ed Kavel [signature] 5-14-13	DATE/TIME 1100	RECEIVED BY/STORED IN SSU #1 5-14-13	DATE/TIME 1100
RELINQUISHED BY/REMOVED FROM SSU #1 5-14-13	DATE/TIME 1200	RECEIVED BY/STORED IN Ed Kavel [signature] 5-14-13	DATE/TIME 1200
RELINQUISHED BY/REMOVED FROM Ed Kavel [signature] 5-14-13	DATE/TIME 1235	RECEIVED BY/STORED IN J. Bock [signature] TALK 5-14-13	DATE/TIME 1235
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME

SPECIAL INSTRUCTIONS
** The 200 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF. TRVL-13-057

TRVL-13-057

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

PRINTED ON 5/6/2013

A-6003-618 (REV 2)

JULY 3, 2013

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F10-284-062	PAGE 1 OF 1
COLLECTOR Kevin McIntyre	COMPANY CONTACT EVANS, RT	TELEPHONE NO. 373-7924	PROJECT COORDINATOR EVANS, RT	PRICE CODE 7H AIR QUALITY ☐	DATA TURNAROUND 30 Days / 30 Days
SAMPLING LOCATION Influent Valve, V-WE06C -- DUP	PROJECT DESIGNATION 100-KW Pump and Treat Influent & Effluent Tanks - Water		SAF NO. F10-284		
ICE CHEST NO.	FIELD LOGBOOK NO. HNF-N-451-5/78	ACTUAL SAMPLE DEPTH N/A	COA 302886ES10	METHOD OF SHIPMENT GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO TestAmerica Incorporated, Richland	OFFSITE PROPERTY NO. SEE PTR		BILL OF LADING/AIR BILL NO. SEE PTR		

MATRIX*
A=Air
DL=Drum Liquids
DS=Drum Solids
L=Liquid
O=Oil
S=Soil
SE=Sediment
T=Tissue
V=Vegetation
W=Water
WI=Wipe
X=Other

POSSIBLE SAMPLE HAZARDS/ REMARKS
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	None
HOLDING TIME	6 Months
TYPE OF CONTAINER	G/P
NO. OF CONTAINER(S)	2
VOLUME	1L
SAMPLE ANALYSIS	C14_LSC: COMMON;

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B2PD99	WATER	5-14-13	0817	✓

J3E160433
W06567
Due 6/14/13
mov19

CHAIN OF POSSESSION		SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM Ed Kawa	DATE/TIME 5-14-13 1100	RECEIVED BY/STORED IN SSU #1	DATE/TIME 5-14-13 1100
RELINQUISHED BY/REMOVED FROM SSU #1	DATE/TIME 5-14-13 1200	RECEIVED BY/STORED IN Ed Kawa	DATE/TIME 5-14-13 1200
RELINQUISHED BY/REMOVED FROM Ed Kawa	DATE/TIME 5-14-13 1235	RECEIVED BY/STORED IN J. Bock TALR	DATE/TIME 5-14-13 1235
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME

SPECIAL INSTRUCTIONS
** The 200 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF. TRVL-13-057

TRVL 13- 057

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

PRINTED ON 5/6/2013

A-6003-618 (REV 2)

JULY 3, 2013

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F10-284-064	PAGE 1 OF 1
COLLECTOR KAVA MCINTYRE	COMPANY CONTACT EVANS, RT	TELEPHONE NO. 373-7924	PROJECT COORDINATOR EVANS, RT	PRICE CODE 7H	DATA TURNAROUND
SAMPLING LOCATION Effluent Valve, V-WJ13	PROJECT DESIGNATION 100-KW Pump and Treat Influent & Effluent Tanks - Water		SAF NO. F10-284	AIR QUALITY ☐	30 Days / 30 Days
ICE CHEST NO.	FIELD LOGBOOK NO. HNF-N-451-5/78	ACTUAL SAMPLE DEPTH N/A	COA 302886ES10	METHOD OF SHIPMENT GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO TestAmerica Incorporated, Richland	OFFSITE PROPERTY NO. SEE PTR		BILL OF LADING/AIR BILL NO. SEE PTR		

MATRIX*
A=Air
DL=Drum Liquids
DS=Drum Solids
L=Liquid
O=Oil
S=Soil
SE=Sediment
T=Tissue
V=Vegetation
W=Water
WI=Wipe
X=Other

POSSIBLE SAMPLE HAZARDS/ REMARKS
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	None
HOLDING TIME	6 Months
TYPE OF CONTAINER	G/P
NO. OF CONTAINER(S)	2
VOLUME	1L
SAMPLE ANALYSIS	C14_LSC: COMMON;

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B2PDB1	WATER	5-14-13	0840	✓

J3E160433
WD6567
Due 6/14/13
MOV2A

CHAIN OF POSSESSION		SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM Ed Kava Sheldon	DATE/TIME 5-14-13 1100	RECEIVED BY/STORED IN SSU #1	DATE/TIME 5-14-13 1100
RELINQUISHED BY/REMOVED FROM SSU #1	DATE/TIME 1200	RECEIVED BY/STORED IN Ed Kava Sheldon	DATE/TIME 5-14-13 1200
RELINQUISHED BY/REMOVED FROM Ed Kava Sheldon	DATE/TIME 5-14-13 1235	RECEIVED BY/STORED IN J Bock Jack TALR	DATE/TIME 5-14-13 1235
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME

SPECIAL INSTRUCTIONS
** The 200 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF. TRVL-13-057

TRVL- 13- 057

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

PRINTED ON 5/6/2013

A-6003-618 (REV 2)

JULY 3, 2013

JULY 3, 2013

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sample Check-in List

Date/Time Received: 5-14-13 | 1235 Container GM Screen Result: (Airlock) .6 Initials [ ]
Sample GM Screen Result (Sample Receiving) .4 Initials [ ]

Client: Plow (FLH) SDG #: W06567 SAF #: F10-284 NA [ ]

Lot Number: 53E160433

Chain of Custody # F10-284-060; to 7 5-14-13 062; 064

Shipping Container ID or Air Bill Number : hand delivered NA [ ]

Samples received inside shipping container/cooler/box Yes [ ] Continue with 1 through 4. Initial appropriate response.
No [ ] Go to 5, add comment to #16.

1. Custody Seals on shipping container intact? Yes [ ] No [ ] No Custody Seal [ ]
2. Custody Seals dated and signed? Yes [ ] No [ ] No Custody Seal [ ]
3. Cooler temperature: on ice °C ~~NA [ ]~~ SKS 5-16-13
4. Vermiculite/packing materials is NA [ ] Wet [ ] Dry [ ]

Item 5 through 16 for samples. Initial appropriate response.

5. Chain of Custody record present? Yes [ ] No [ ]
6. Number of samples received (Each sample may contain multiple bottles): 3
7. Containers received: 6 x 4P
8. Sample holding times exceeded? NA [ ] Yes [ ] No [ ]
9. Samples have: ____tape ____hazard labels ____custody seals ____appropriate sample labels
10. Matrix: ____A (FLT, Wipe, Solid, Soil) ____I (Water) ____S (Air, Niosh 7400) ____T (Biological, Ni-63)
11. Samples:
____are in good condition ____are leaking ____are broken
____have air bubbles (Only for samples requiring no head space) ____Other ____
12. Sample pH appropriate for analysis requested Yes [ ] No [ ] NA [ ]
(If acidification is necessary go to 17, then document sample ID, initial pH, amount of HNO_3 added and pH after addition on table)
13. Were any anomalies identified in sample receipt? Yes [ ] No [ ]
14. Description of anomalies (include sample numbers): NA [ ]
15. Sample Location, Sample Collector Listed on COC? * Yes [ ] No [ ]
*For documentation only. No corrective action needed.
16. Additional Information: N/A

[ ] Client/Courier denied temperature check. [ ] Client/Courier unpack cooler.

Sample Check-in List completed by Sample Custodian:
Signature: Judi Beck Date: 5-14-13

Client Notification needed? Yes [ ] No [ ] Date:
By:
Person contacted:

[ ] No action necessary; process as is

Project Manager Sandra Legue Date 5-16-13

LS-023 Rev. 16, 02/13

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6/28/2013 9:27:55 AM

Sample Preparation/Analysis

108302, CH2M Hill Plateau Remediation DOE RL
, Waste Management Federal Servi

AnalyDueDate: 06/14/2013

5S C-14 Prp/Sep LSC008
S3 Carbon-14 by Liquid Scint
5I CLIENT: HANFORD

Balance Id:

Pipet #: _____

Sep1 DT/Tm Tech:

Sep2 DT/Tm Tech:

Prep Tech: ,AshworthA

Batch: 3136052 WATER pCi/L
SEQ Batch, Test: None All Tests: 3136052 5SS3,

PM, Quote: SS , 29754

Work Ord, Lot, Sample Date	Total Amt/Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Tracer Yield	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:
1 M0V18-1-AA J3E160433-1-SAMP 05/14/2013 08:17			74.90g,in 74.90g	AmtRec: 2XLP	#Containers: 2				Scr:	Alpha: 1.33E-04 uCi/Sa		Beta: -8.89E-05 uCi/Sa	
2 M0V18-1-AC-X J3E160433-1-DUP 05/14/2013 08:17			75.10g,in 75.10g	AmtRec: 2XLP	#Containers: 2				Scr:	Alpha: 1.33E-04 uCi/Sa		Beta: -8.89E-05 uCi/Sa	
3 M0V19-1-AA J3E160433-2-SAMP 05/14/2013 08:17			75.10g,in 75.10g	AmtRec: 2XLP	#Containers: 2				Scr:	Alpha: -5.48E-05 uCi/Sa		Beta: 2.22E-04 uCi/Sa	
4 M0V2A-1-AA J3E160433-3-SAMP 05/14/2013 08:40			75.40g,in 75.40g	AmtRec: 2XLP	#Containers: 2				Scr:	Alpha: 3.67E-04 uCi/Sa		Beta: 4.43E-05 uCi/Sa	
5 M0V39-1-AA-B J3E160000-52-BLK 05/16/2013 15:58 pd			74.70g,in 74.70g	AmtRec:	#Containers: 1				Scr:	Alpha:		Beta:	
6 M0V39-1-AC-C J3E160000-52-LCS 05/16/2013 15:58 pd			75.20g,in 75.20g	AmtRec:	CSB1264 5/25/13,pd 11/08/12,r #Containers: 1				Scr:	Alpha:		Beta:	
7 M0V39-1-AD-BI J3E160000-52-IBLK 05/16/2013 15:58 pd				AmtRec:	#Containers: 1				Scr:	Alpha:		Beta:	

JULY 3, 2013

6/28/2013 9:27:57 AM

Sample Preparation/Analysis

5S C-14 Prp/Sep LSC008
S3 Carbon-14 by Liquid Scint
5I CLIENT: HANFORD

Balance Id:

Pipet #:

AnalyDueDate: 06/14/2013

Sep1 DT/Tm Tech:

Batch: 3136052 pCi/L
SEQ Batch, Test: None

Sep2 DT/Tm Tech:

Prep Tech:

Work Ord, Lot, Sample Date	Total Amt/Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Tracer Yield	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:

Comments:

All Clients for Batch:
108302, CH2M Hill Plateau Remediation DOE RL Waste Management Federal Servi, SS , 29754

M0V181AA-SAMP Constituent List:

C-14	RDL:200	pCi/L	LCL:70	UCL:130	RPD:20
M0V391AA-BLK:					
C-14	RDL:200	pCi/L	LCL:	UCL:	RPD:
M0V391AC-LCS:					
C-14	RDL:200	pCi/L	LCL:70	UCL:130	RPD:20
M0V391AD-IBLK:					
C-14	RDL:200	pCi/L	LCL:	UCL:	RPD:

M0V181AA-SAMP Calc Info:

Uncert Level (#s).: 2	Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B
M0V391AA-BLK:				
Uncert Level (#s).: 2	Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B
M0V391AC-LCS:				
Uncert Level (#s).: 2	Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B
M0V391AD-IBLK:				
Uncert Level (#s).: 2	Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B

JULY 3, 2013

7/2/2013 12:54:39 PM

ICOC Fraction Transfer/Status Report

ByDate: 7/2/2012, 7/7/2013, Batch: '3136052', User: *ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
3136052						
AC		Rev1C	NortonJ	6/28/2013 9:52:24		
SC			DavilaN	IsBatched	5/16/2013 3:59:52 PM	ICOC_RADCALC v4.8.49
SC			NortonJ	InCnt1	6/28/2013 9:52:24 AM	RL-CI-005 REVISION 3
SC			NortonJ	CalcC	7/2/2013 12:46:52 PM	RL-CI-005 REVISION 3
SC			mcginnist	Rev1C	7/2/2013 12:54:26 PM	RL-DR-001 Rev 2
AC			NortonJ	7/2/2013 12:46:52 PM		
AC			mcginnist	7/2/2013 12:54:26 PM		

AC: Accepting Entry; SC: Status Change

TestAmerica Richland

Richland Wa.

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Grp Rec Cnt: 3

ICOCFractions v4.8.44